Small Business Innovation Research/Small Business Tech Transfer

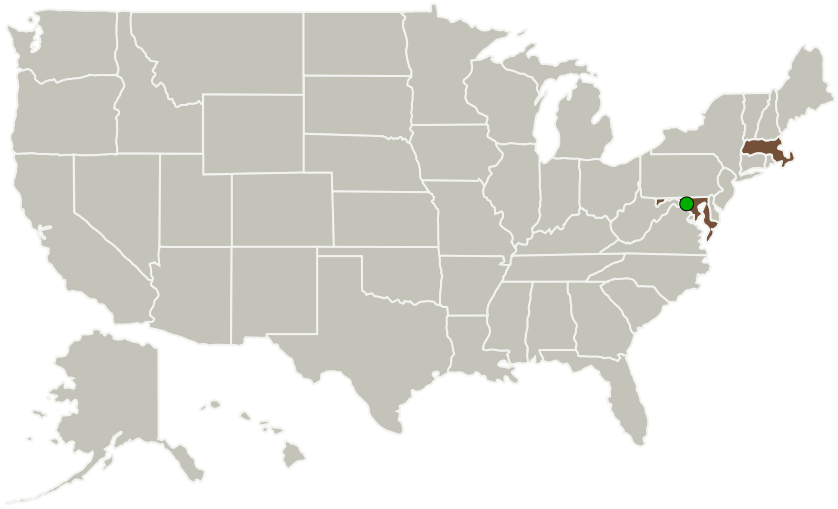
New Lamellar Grating Interferometer for Spectroscopy, Phase I

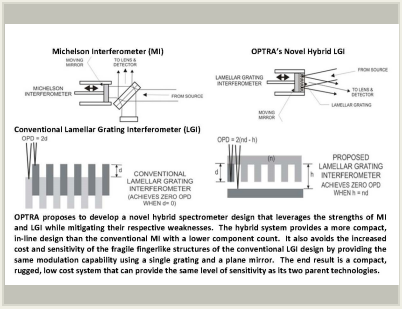
Completed Technology Project (2015 - 2015)

Project Introduction

NASA is interested characterizing the atmospheric concentration of greenhouse gases critical to global warming phenomena, and their fluxes over time. For this reason, NASA has invested in the Total Carbon Column Observing Network (TCCON), which comprises sun trackers with high resolution Fourier Transform Spectrometers. NASA is currently looking to expand their observation network in order to provide more data for their atmospheric research, but this will require a reduction in spectrometer size and cost. OPTRA proposes to address this need through the development of a novel hybrid spectrometer design that leverages the strengths of Michelson and lamellar grating interferometers, while mitigating their individual weaknesses. The end result will be a compact, rugged, low cost spectrometer capable of the same performance as the current TCCON network. This technology will further be extendable to any applications where spectral data is required, but instrument size and cost are at a premium. Examples include methane pipeline monitoring, volcano emission characterization or UAV-based remote sensing.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Optra, Inc.	Lead Organization	Industry	Topsfield, Massachusetts
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Massachusetts

Project Transitions

June 2015: Project Start

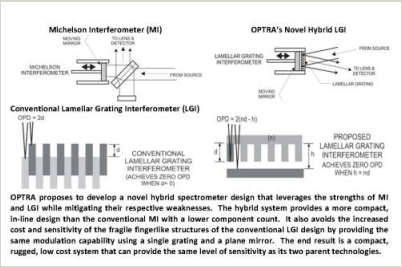
December 2015: Closed out

Closeout Summary: New Lamellar Grating Interferometer for Spectroscopy, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/139278)*

Images



Briefing Chart Image
New Lamellar Grating Interferometer for Spectroscopy, Phase I
(https://techport.nasa.gov/image/130656)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Optra, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

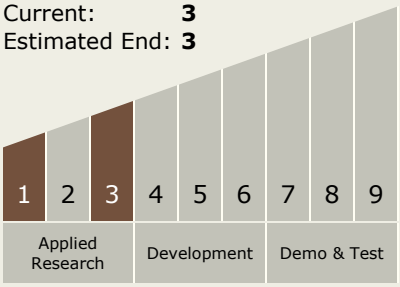
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Elizabeth Schundler

Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System